ANNEX

CHILDHOOD AND ADOLESCENT SCHEDULE FOOTNOTES

1. **Hepatitis B vaccine (HepB).** *AT BIRTH:* **All newborns** should receive monovalent HepB soon after birth and before hospital discharge. **Infants born to mothers who are HBsAg-positive** should receive HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. **Infants born to mothers whose HBsAg status is unknown** should receive HepB within 12 hours of birth. The mother should have blood drawn as soon as possible to determine her HBsAg status; if HBsAg-positive, the infant should receive HBIG as soon as possible (no later than age 1 week). **For infants born to HBsAg-negative mothers,** the birth dose can be delayed in rare circumstances but only if a physician's order to withhold the vaccine and a copy of the mother's original HBsAg-negative laboratory report are documented in the infant's medical record. ***FOLLOWING THE BIRTH DOSE:*** The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1–2 months. The final dose should be administered at age ≥24 weeks. It is permissible to administer 4 doses of HepB (e.g., when combination vaccines are administered after the birth dose); however, if monovalent HepB is used, a dose at age 4 months is not needed. **Infants born to HBsAg-positive mothers** should be tested for HBsAg and antibody to HBsAg after completion of the HepB series at age 9–18 months (generally at the next well-child visit after completion of the vaccine series).
2. **Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).** The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15–18 months. The final dose in the series should be administered at age ≥4 years.

   Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap – adolescent preparation) is recommended at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a Td booster dose. Adolescents aged 13–18 years who missed the age 11–12-year Td/Tdap booster dose should also receive a single dose of Tdap if they have completed the recommended childhood DTP/DTaP vaccination series. Subsequent **tetanus and diphtheria toxoids (Td)** are recommended every 10 years.
3. ***Haemophilus influenzae* type b conjugate vaccine (Hib).** Three Hib conjugate vaccines are licensed for infant use. If PRP-OMP (PedvaxHIB® or COMVAX® [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required. DTaP/Hib combination products should not be used for primary immunization in infants at ages 2, 4 or 6 months but can be used as boosters after any Hib vaccine. The final dose in the series should be administered at age ≥12 months.
4. **Measles, mumps, and rubella vaccine (MMR).** The second dose of MMR is recommended routinely at age 4–6 years but may be administered during any visit, provided at least 4 weeks have elapsed since the first dose and both doses are administered beginning at or after age 12 months. Children who have not previously received the second dose should complete the schedule by age 11–12 years.
5. **Varicella vaccine.** Varicella vaccine is recommended at any visit at or after age 12 months for susceptible children (i.e., those who lack a reliable history of chickenpox). Susceptible persons aged ≥13 years should receive 2 doses administered at least 4 weeks apart.
6. **Meningococcal vaccine (MCV4).** Meningococcal conjugate vaccine (MCV4) should be given to all children at the 11–12-year-old visit as well as to unvaccinated adolescents at high school entry (aged 15 years). Other adolescents who wish to decrease their risk for meningococcal disease may also be vaccinated. All college freshmen living in dormitories should also be vaccinated, preferably with MCV4, although **meningococcal polysaccharide vaccine (MPSV4)** is an acceptable alternative. Vaccination against invasive meningococcal disease is recommended for children and adolescents aged ≥2 years with terminal complement deficiencies or anatomic or functional asplenia and for certain other high-risk groups (see *MMWR* 2005;54 [RR-7]:1-21); use MPSV4 for children aged 2–10 years and MCV4 for older children, although MPSV4 is an acceptable alternative.
7. **Pneumococcal vaccine.** The heptavalent **pneumococcal conjugate vaccine (PCV)** is recommended for all children aged 2–23 months and for certain children aged 24–59 months. The final dose in the series should be administered at age ≥12 months. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups. See *MMWR* 2000; 49(RR-9):1-35.
8. **Influenza vaccine.** Influenza vaccine is recommended annually for children aged ≥6 months with certain risk factors (including, but not limited to, asthma, cardiac disease, sickle cell disease, human immunodeficiency virus [HIV], diabetes, and conditions that can compromise respiratory function or handling of respiratory secretions or that can increase the risk for aspiration), healthcare workers, and other persons (including household members) in close contact with persons in groups at high risk (see *MMWR* 2005;54[RR-8]:1-55). In addition, healthy children aged 6–23 months and close contacts of healthy children aged 0–5 months are recommended to receive influenza vaccine because children in this age group are at substantially increased risk for influenza-related hospitalizations. For healthy persons aged 5–49 years, the intranasally administered, live, attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See *MMWR* 2005;54(RR-8):1-55. Children receiving TIV should be administered a dosage appropriate for their age (0.25 mL if aged 6–35 months or 0.5 mL if aged ≥3 years). Children aged ≤8 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by at least 4 weeks for TIV and at least 6 weeks for LAIV).
9. **Hepatitis A vaccine (HepA).** HepA is recommended for all children at 1 year of age (i.e., 12–23 months). The 2 doses in the series should be administered at least 6 months apart. States, counties, and communities with existing HepA vaccination programs for children 2–18 years of age are encouraged to maintain these programs. In these areas, new efforts focused on routine vaccination of 1-year-old children should enhance, not replace, ongoing programs directed at a broader population of children. HepA is also recommended for certain high-risk groups (see *MMWR* 1999; 48[RR-12]1-37).

CHILD AND ADOLESCENT CATCH-UP SCHEDULE FOOTNOTES

1. **DTaP.** The fifth dose is not necessary if the fourth dose was administered after the fourth birthday.
2. **IPV.** For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was administered at age ≥4 years. If both OPV and IPV were administered as part of a series, a total of 4 doses should be given, regardless of the child's current age.
3. **HepB.** Administer the 3-dose series to all children and adolescents <19 years of age if they were not previously vaccinated.
4. **MMR.** The second dose of MMR is recommended routinely at age 4–6 years but may be administered earlier if desired.
5. **Hib.** Vaccine is not generally recommended for children aged ≥5 years.
6. **Hib.** If current age <12 months and the first 2 doses were PRP-OMP (PedvaxHIB® or COMVAX® [Merck]), the third (and final) dose should be administered at age 12–15 months and at least 8 weeks after the second dose.
7. **PCV.** Vaccine is not generally recommended for children aged ≥5 years.
8. **Td.** Adolescent tetanus, diphtheria, and pertussis vaccine (Tdap) may be substituted for any dose in a primary catch-up series or as a booster if age appropriate for Tdap. A five-year interval from the last Td dose is encouraged when Tdap is used as a booster dose. See ACIP recommendations for further information.
9. **IPV.** Vaccine is not generally recommended for persons aged ≥18 years.
10. **Varicella.** Administer the 2-dose series to all susceptible adolescents aged ≥13 years.

ADULT SCHEDULE FOOTNOTES

1. **Tetanus and Diphtheria (Td) vaccination.** Adults with uncertain histories of a complete primary vaccination series with diphtheria and tetanus toxoid-containing vaccines should receive a primary series using combined Td toxoid. A primary series for adults is 3 doses; administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the second. Administer 1 dose if the person received the primary series and if the last vaccination was received >10 years previously. Consult ACIP statement for recommendations for administering Td as prophylaxis in wound management (*www.cdc.gov/mmwr/preview/mmwrhtml/00041645.htm*). The American College of Physicians Task Force on Adult Immunization supports a second option for Td use in adults: a single Td booster at age 50 years for persons who have completed the full pediatric series, including the teenage/young adult booster. A newly licensed tetanus-diphtheria-acellular pertussis vaccine is available for adults. ACIP recommendations for its use will be published.
2. **Measles, Mumps, Rubella (MMR) vaccination.** ***Measles component:*** Adults born before 1957 can be considered immune to measles. Adults born during or after 1957 should receive >1 dose of MMR unless they have a medical contraindication, documentation of >1 dose, history of measles based on healthcare provider diagnosis, or laboratory evidence of immunity. A second dose of MMR is recommended for adults who **1)** were recently exposed to measles or in an outbreak setting, **2)** were previously vaccinated with killed measles vaccine, **3)** were vaccinated with an unknown type of measles vaccine during 1963–1967, **4)** are students in postsecondary educational institutions, **5)** work in a healthcare facility, or **6)** plan to travel internationally. Withhold MMR or other measles-containing vaccines from HIV-infected persons with severe immunosuppression. ***Mumps component:*** 1 dose of MMR vaccine should be adequate for protection for those born during or after 1957 who lack a history of mumps based on healthcare provider diagnosis or who lack laboratory evidence of immunity. ***Rubella component:*** Administer 1 dose of MMR vaccine to women whose rubella vaccination history is unreliable or who lack laboratory evidence of immunity. For women of child-bearing age, regardless of birth year, routinely determine rubella immunity and counsel women regarding congenital rubella syndrome. Do not vaccinate women who are pregnant or might become pregnant within 4 weeks of receiving the vaccine. Women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility.
3. **Varicella vaccination.** Varicella vaccination is recommended for all adults without evidence of immunity to varicella. Special consideration should be given to those who **1)** have close contact with persons at high risk for severe disease (healthcare workers and family contacts of immunocompromised persons) or **2)** are at high risk for exposure or transmission (e.g., teachers of young children; child care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers). Evidence of immunity to varicella in adults includes any of the following: **1)** documented age-appropriate varicella vaccination (i.e., receipt of 1 dose before age 13 years or receipt of 2 doses [administered at least 4 weeks apart] after age 13 years); **2)** born in the United States before 1966; **3)** history of varicella disease based on healthcare provider diagnosis or self- or parental-report of typical varicella disease for non-U.S.-born persons born before 1966 and all persons born during 1966– 1997 (for a patient reporting a history of an atypical, mild case, healthcare providers should seek either an epidemiologic link with a typical varicella case or evidence of laboratory confirmation, if it was performed at the time of acute disease); **4)** history of herpes zoster based on healthcare provider diagnosis; or **5)** laboratory evidence of immunity. Do not vaccinate women who are pregnant or might become pregnant within 4 weeks of receiving the vaccine. Assess pregnant women for evidence of varicella immunity. Women who do not have evidence of immunity should receive dose 1 of varicella vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility. Dose 2 should be given 4–8 weeks after dose 1.
4. **Influenza vaccination.** ***Medical indications:*** Chronic disorders of the cardiovascular or pulmonary systems, including asthma; chronic metabolic diseases, including diabetes mellitus, renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications or by HIV); any condition (e.g., cognitive dysfunction, spinal cord injury, seizure disorder or other neuromuscular disorder) that compromises respiratory function or the handling of respiratory secretions or that can increase the risk of aspiration; and pregnancy during the influenza season. No data exist on the risk for severe or complicated influenza disease among persons with asplenia; however, influenza is a risk factor for secondary bacterial infections that can cause severe disease among persons with asplenia. ***Occupational indications:*** Healthcare workers and employees of long-term care and assisted living facilities. ***Other indications:*** residents of nursing homes and other long-term care and assisted living facilities; persons likely to transmit influenza to persons at high risk (i.e., in-home household contacts and caregivers of children birth through 23 months of age, or persons of all ages with high-risk conditions); and anyone who wishes to be vaccinated. For healthy nonpregnant persons aged 5–49 years without high-risk conditions who are not contacts of severely immunocompromised persons in special care units, intranasally administered influenza vaccine (FluMist®) may be administered in lieu of inactivated vaccine.
5. **Pneumococcal polysaccharide vaccination.** ***Medical indications:*** Chronic disorders of the pulmonary system (excluding asthma); cardiovascular diseases; diabetes mellitus; chronic liver diseases, including liver disease as a result of alcohol abuse (e.g.,cirrhosis); chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]); immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection [vaccinate as close to diagnosis as possible when CD4 cell counts are highest], leukemia, lymphoma, multiple myeloma, Hodgkin disease, generalized malignancy, organ or bone marrow transplantation); chemotherapy with alkylating agents, antimetabolites, or high-dose, long-term corticosteroids; and cochlear implants. ***Other indications:*** Alaska Natives and certain American Indian populations; residents of nursing homes and other long-term care facilities.
6. **Revaccination with pneumococcal polysaccharide vaccine.** One-time revaccination after 5 years for persons with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection, leukemia, lymphoma, multiple myeloma, Hodgkin disease, generalized malignancy, organ or bone marrow transplantation); or chemotherapy with alkylating agents, antimetabolites, or high-dose, long-term corticosteroids. For persons aged >65 years, one-time revaccination if they were vaccinated >5 years previously and were aged <65 years at the time of primary vaccination.
7. **Hepatitis A vaccination.** ***Medical indications:*** Persons with clotting factor disorders or chronic liver disease. ***Behavioral indications:*** Men who have sex with men or users of illegal drugs. ***Occupational indications:*** Persons working with hepatitis A virus (HAV)-infected primates or with HAV in a research laboratory setting. ***Other indications:*** Persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A (for list of countries, visit *www.cdc.gov/travel/diseases.htm#hepa*) as well as any person wishing to obtain immunity. Current vaccines should be given in a 2-dose series at either 0 and 6–12 months, or 0 and 6–18 months. If the combined hepatitis A and hepatitis B vaccine is used, administer 3 doses at 0, 1, and 6 months.
8. **Hepatitis B vaccination.** ***Medical indications:*** Hemodialysis patients (use special formulation [40 µg/mL] or two 20-µg/mL doses) or patients who receive clotting factor concentrates. ***Occupational indications:*** Healthcare workers and public-safety workers who have exposure to blood in the workplace; and persons in training in schools of medicine, dentistry, nursing, laboratory technology, and other allied health professions. Behavioral indications: injection-drug users; persons with more than one sex partner in the previous 6 months; persons with a recently acquired sexually transmitted disease (STD); and men who have sex with men. ***Other indications:*** household contacts and sex partners of persons with chronic hepatitis B virus (HBV) infection; clients and staff of institutions for the developmentally disabled; all clients of STD clinics; inmates of correctional facilities; or international travelers who will be in countries with high or intermediate prevalence of chronic HBV infection for >6 months (for list of countries, visit *www.cdc.gov/travel/diseases.htm#hepa*).
9. **Meningococcal vaccination.** ***Medical indications:*** Adults with anatomic or functional asplenia, or terminal complement component deficiencies. ***Other indications:*** first-year college students living in dormitories; microbiologists who are routinely exposed to isolates of Neisseria meningitidis; military recruits; and persons who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of sub-Saharan Africa during the dry season [Dec–June]), particularly if contact with the local populations will be prolonged. Vaccination is required by the government of Saudi Arabia for all travelers to Mecca during the annual Hajj. Meningococcal conjugate vaccine is preferred for adults meeting any of the above indications who are aged <55 years, although meningococcal polysaccharide vaccine (MPSV4) is an acceptable alternative. Revaccination after 5 years may be indicated for adults previously vaccinated with MPSV4 who remain at high risk for infection (e.g., persons residing in areas in which disease is epidemic).
10. **Selected conditions for which *Haemophilus influenzae* type b (Hib) vaccine may be used.** *Haemophilus influenzae* type b conjugate vaccines are licensed for children aged 6 weeks–71 months. No efficacy data are available on which to base a recommendation concerning use of Hib vaccine for older children and adults with the chronic conditions associated with an increased risk for Hib disease. However, studies suggest good immunogenicity in patients who have sickle cell disease, leukemia, or HIV infection, or have had splenectomies; administering vaccine to these patients is not contraindicated.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

AAFP	American Academy of Family Physicians
AARP	(*formerly* American Association of Retired Persons)
AAP	American Academy of Pediatrics
ACASA	Adult Clinic Assessment Software Application
ACIP	Advisory Committee on Immunization Practices
ACP	American College of Physicians
ACPE	Advisory Committee of Polio Eradication (WHO)
AED	Academy for Educational Development
AFIX	Assessment, Feedback, Incentives, Exchange: a quality improvement immunization coverage strategy
AIM	Association of Immunization Managers
AIRA	American Immunization Registry Association
ANR	audio news release
AMA	American Medical Association
APhA	American Pharmacists Association
ASTHO	Association of State and Territorial Health Officials
BRFSS	Behavioral Risk Factor Surveillance System
CASA	Clinic Assessment Software Application
CDC	Centers for Disease Control and Prevention
CISA	Clinical Immunization Safety Assessment Network
CMS	Center for Medicare and Medicaid Services
CoCASA	Comprehensive Clinic Assessment Software Application
CRS	congenital rubella syndrome
DT	diphtheria/tetanus vaccine
DTaP	diphtheria/tetanus/acellular pertussis vaccine
DTP	diphtheria/tetanus/pertussis vaccine
ETA	Enhanced Technical Assistance Project
EIS	Epidemic Intelligence Service
FDA	Food and Drug Administration
GAO	Government Accountability Office
GAVI	Global Alliance for Vaccines and Immunization
GIVS	Global Immunization Vision and Strategies
HBV	hepatitis B vaccine
HepA	hepatitis A vaccine
HepB	hepatitis B vaccine
HHS	Department of Health and Human Services
Hib	*Haemophilus influenzae* type b conjugate vaccine
IAP	Immunization Action Plan
IIS	immunization information system (registry)
IND	investigational new drug
IOM	Institute of Medicine
IPV	inactivated poliovirus vaccine
IRAR	Immunization Registry Annual Report
IRB	institutional review board
IRSB	Immunization Registry Support Branch
ISD	Immunization Services Division
ISO	Immunization Safety Office
KAB	knowledge, attitudes, and beliefs
LAIV	live attenuated influenza vaccine
MCV	measles-containing vaccine
MCV4	meningococcal conjugate vaccine (quadrivalent)
MMR	measles/mumps/rubella vaccine
MPSV4	meningococcal polysaccharide vaccine (quadrivalent)
NACCHO	National Association of Country and City Health Officials
NBCH	National Business Coalition on Health
NCID	National Center for Infectious Diseases
NCHS	National Center for Health Statistics
NCHSTP	National Center for HIV, STD and TB Prevention
NFID	National Foundation for Infectious Diseases
NID	National Immunization Days
NIH	National Institutes of Health
NIIH	National Immunization Information Hotline
NIIW	National Infant Immunization Week
NIP	CDC National Immunization Program
NIS	National Immunization Survey
NVAC	National Vaccine Advisory Committee
NVPO	National Vaccine Program Office
NVSN	New Vaccine Surveillance Network
OPER	Office of PReparedness and Emergency Response
OPV	oral polio vaccine
PAHO	Pan American Health Organization
PCV, PCV-7	pneumococcal conjugate vaccine
PHII	Public Health Informatics Institute
PPV	pneumococcal polysaccharide vaccine
PSA	public service announcement
SBIR	small business innovation research
SIA	Supplemental Immunization Activities
STOP	Stop Transmission of Polio
Td	tetanus-diphtheria vaccine
Tdap	tetanus and diphtheria toxoids and acellular pertussis vaccine
TIV	trivalent influenza vaccine
TTY	tele-typewriter
U.S.	United States
UNICEF	United Nations Children's Fund
USDA	U.S. Department of Agriculture
USPHS	U.S. Public Health Service
VAERS	Vaccine Adverse Event Reporting System
VARP	Vaccine Acceptance and Risk Perception
VAU	vaccine analytic unit
VAXDEV	Vaccine Technology Development
VFC	Vaccines for Children Program
VIS	Vaccine Information Statement
VISI	Vaccine Identification Standards Initiative
VMBIP	Vaccine Management Business Improvement Project
VSD	Vaccine Safety Datalink
NVPO	National Vaccine Program Office
WHO	World Health Organization
WIC	Women, Infants, and Children

Diphtheria
This serious disease is caused by bacteria that produce a poison or toxin. Diphtheria can cause blockage of the airway, making it impossible to breathe. It can also cause heart problems and paralysis of the muscles needed for swallowing.

Hib Disease
Haemophilus influenzae type b (Hib) bacteria cause meningitis. Hib can also cause pneumonia and infection of the blood, joints, bones, throat, and heart covering. The disease is very serious for children younger than age 5, especially infants. In the pre-vaccine era, about 3%–8% of Hib meningitis cases were fatal and, of those children who survived, 15%–30% suffered neurologic damage.

Hepatitis A
Hepatitis A is a liver disease. Older persons are more likely to have symptoms, such as fever, tiredness, loss of appetite, nausea, abdominal discomfort, dark urine, and jaundice (yellowing of the skin and eyes) than children. Hepatitis A virus is spread from person to person by putting something in the mouth that has been contaminated with the virus. This type of transmission is called "fecal-oral." For this reason, the virus is more easily spread in areas where there are poor sanitary conditions or where good personal hygiene is not observed.

Hepatitis B
Hepatitis B is an infection of the liver caused by a virus. It spreads through contact with blood or other body fluids due to sexual contact or sharing of personal items such as needles for injecting drugs, razors, toothbrushes, or eating utensils. Hepatitis B causes a flu-like illness with loss of appetite, nausea, vomiting, rashes, joint pain, and jaundice. An infected pregnant woman can expose her newborn to this virus during birth. The virus stays in the liver of some people for the rest of their lives and can result in severe liver diseases or cancer.

Influenza (flu)
Influenza is a highly contagious viral infection of the nose, throat, and lungs. It is one of the most severe illnesses of the winter season and spreads easily when an infected person coughs or sneezes. Influenza may lead to hospitalization or even death, especially among the elderly. Typical symptoms include an abrupt onset of high fever, chills, a dry cough, headache, runny nose, sore throat, and muscle and joint pain. Extreme fatigue can last from several days to weeks.

Measles
The measles virus is spread very easily. Just being in the same room with a person with measles is enough to catch the disease. Symptoms include a rash, fever, cough, and watery eyes. Measles can also cause pneumonia, seizures, brain damage, or death. Of every 1,000 children who get measles, 1 or 2 will die from the disease.

Meningococcal Disease
Caused by a bacteria, meningococcal disease is a leading cause of bacterial meningitis (an infection of fluid surrounding the brain and the spinal cord) in children. Meningococcal disease also causes blood infections, which can be treated with antibiotics; still about one of every ten people who get the disease dies from it. Survivors may lose their arms or legs, become deaf, have problems with their nervous systems, become mentally retarded, or suffer seizures or strokes. The disease is most common in infants under 1 year of age and people with certain medical conditions. College freshmen living in dorms have an increased risk of getting meningococcal disease.

Mumps
The mumps virus causes fever, headaches, and swollen salivary glands under the jaw. Children who get mumps may develop a mild meningitis (inflammation of the covering of the brain and spinal cord) and sometimes encephalitis (inflammation of the brain). Mumps can also result in permanent hearing loss.

Pertussis (whooping cough)
Pertussis is caused by bacteria. It can cause spells of violent coughing and choking, making it hard to breathe, drink, or eat. The cough can last for weeks. Pertussis is most serious for babies, who can get pneumonia, have seizures, become brain damaged, or even die. About two-thirds of children under 1 year of age who get pertussis must be hospitalized.

Pneumococcal Disease
Pneumococcal disease is a bacterial infection that invades the lungs, causing the most common kind of bacterial pneumonia, which can invade both the bloodstream (bacteremia) and the brain (meningitis). Symptoms include high fever, cough with chest pain and mucus, shaking chills, breathlessness, and chest pain that increases with breathing. Older adults often experience changes in level of consciousness or confusion.

Polio
Polio is caused by a virus that is spread by contact with the feces (bowel movement) of an infected person. Symptoms can include sudden fever, sore throat, headache, muscle weakness, and pain. Polio can cause paralysis and death.

Rubella (German measles)
The rubella virus usually causes a mild sickness with fever, swollen glands, and a rash that lasts about 3 days. But if a pregnant woman gets rubella, she can lose her unborn baby, or the baby can be born blind, deaf, mentally retarded, or with heart defects or other serious problems.

Tetanus (lockjaw)
Tetanus is caused by a toxin or poison produced by a bacteria that enters the body through a cut or wound. Tetanus causes serious, painful spasms and stiffness of all muscles in the body and can lead to "locking" of the jaw so a person cannot open his or her mouth, swallow, or breathe. Three of 10 people who get tetanus die from the disease.

Varicella (chickenpox)
The varicella virus usually causes a rash, itching, tiredness, and fever. It can sometimes lead to severe skin infections, pneumonia, brain infection, or death. Complications occur most often in very young children, adults, or people with damaged immune systems.

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IMPORTANT WEBSITES

Centers for Disease Control and Prevention
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National Immunization Program
www.cdc.gov/nip

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We're already making a huge difference, but there's so much more we can do during the next few years with the recent licensure of new vaccines and several new vaccines on the horizon. There are also enormous opportunities for improving our adult and adolescent immunization programs, narrowing some of the gaps in the childhood immunization program, and assuring equity throughout the U.S. population. And there are opportunities on the global front, with polio eradication and measles mortality reduction. It's tremendous to think about how much of a difference we can make.

—DR. ANNE SCHUCHAT
DIRECTOR, NIP

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

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NIP's Margaret Watkins administers a dose of polio vaccine to a child in rural Sierra Leone during National Immunization Days.